

# Evaluating the Web Future of Our Desktop Application

**Elizabeth Lanzer**

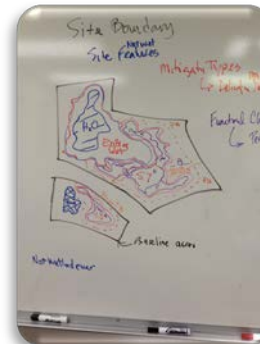
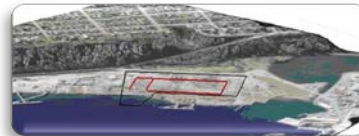
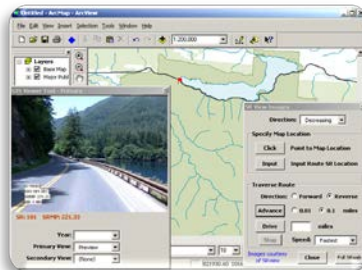
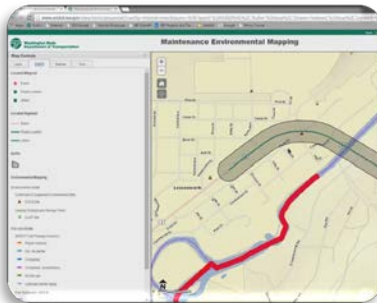
Environmental Services Office

**Julie Jackson**

Transportation Data & GIS Office

**Lynn Peterson**

Secretary of Transportation



State Joint GIS Day  
Olympia, WA  
18 November 2015

# Why Change?

- The GIS Workbench is a critical tool for environmental support to WSDOT
- Budgets for software licenses are tight
- Technology advancements
- Anything “on the web” is cool...

## Anti-PowerPoint Video

The same tasks from the desktop app  
and then from the web app

# Web Pilot Goals

- How much data can we deliver in a web app and how flexible / functional can it be?
- Can the primary desktop app tools be replicated?
- Can a web app make the outputs needed for environmental compliance?
- How do we administer data updates as seamlessly as the desktop app?

# Pilot Findings

- This is probably about as many data sets as can / should be included
- Users like it, but still use the desktop app (so they meet different needs)
- Data Administration is more challenging

# Next Steps

- A next pilot (when we can afford it) should look at geoprocessing tools and more cartographic output solutions
- Still working on data administration solutions that are less dependent on human memory



# Development Process

Visual Studio Team Foundation Server 2013 / RMEC Workbench Web App

Jackson, Julie | ⚙️ ?

HOME CODE WORK BUILD TEST

Search work items 🔍

Backlogs Queries

Features

Backlog items

▲ Past

- Sprint 1
- Sprint 2**
- Sprint 3

▲ Current

- Sprint 4

▲ Future

- Sprint 1

## RMEC Workbench Web App Team Sprint 2

March 27 - April 26  
21 work days

Work details On

Backlog Board Capacity

Create query | Column options | ✉

Title	State	Assigned To	Rema...
▲ Add info template to buffer layer	Done	Jacobson, Jeff	
Add info template to buffer layer	Done	Jacobson, Jeff	
▲ Add graphics to map	Done	Jacobson, Jeff	
Create tools that allow user to draw graphics	Done		
Add draw tools to geoportal	Done	Jacobson, Jeff	
Fix alignment of clear button	Done	Jacobson, Jeff	
Disable click map's onclick event while drawing	Done	Jacobson, Jeff	
Look into multiple selection issues	Done	Jacobson, Jeff	
■ Move default location of measure toolbox	Done		
▲ Ability to delete one graphic selected	Done	Jacobson, Jeff	
Implement ability to delete drawn graphics	Done	Jacobson, Jeff	
▲ Rename graphics layers	Done	Jacobson, Jeff	
Update buffer layer ID	Done	Jacobson, Jeff	
Update ELC layers' IDs	Done	Jacobson, Jeff	
■ Active drawing tool highlighted instead of multiple tools	Done	Jacobson, Jeff	
▲ Discuss tools with RMEC team	Done		
Meet with RMEC users	Done	Smith, Rachel	
▲ Refine Buffer and MP(ELC) tool	Done		

Work

Work By: Activity

Work By: Assigned To

BURNDOWN FOR SPRINT 2

The burndown chart for Sprint 2 shows the progress of the team's work. The Y-axis represents 'Remaining Work' in hours, ranging from 0 to 100. The X-axis shows dates from 3/27/2013 to 4/26/2013. A solid blue area represents the work remaining, and a diagonal line represents the ideal burndown. The chart shows that the team is ahead of the ideal burndown, with work remaining dropping to near zero by the end of the sprint.




# Layer Development

(Map Service)



WAE CY - Municipal Stormwater Permit Areas

Municipal Stormwater Permit Areas (MSWPA) of Washington State.

 Feature Layer by WAE CY\_Geoservices


Last Modified: February 20, 2015

★★★★★ (0 ratings, 0 comments, 286 views)



Washington State NHD Hydrography

A cached map of the NHD Hydrography data for Washington state.

 Tile Layer by WAE CY\_Geoservices

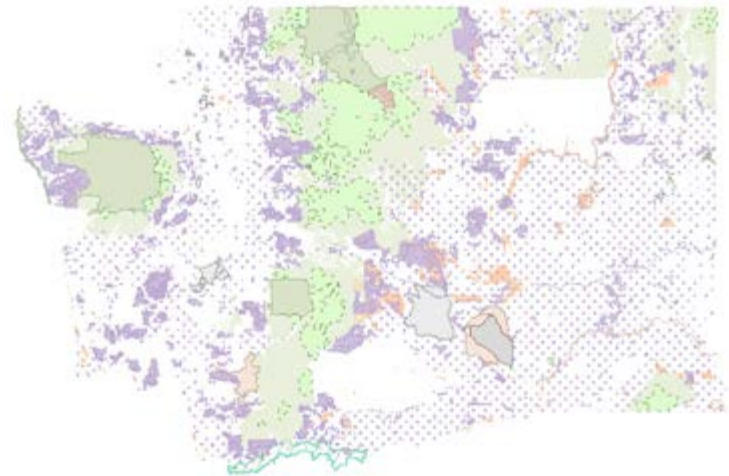
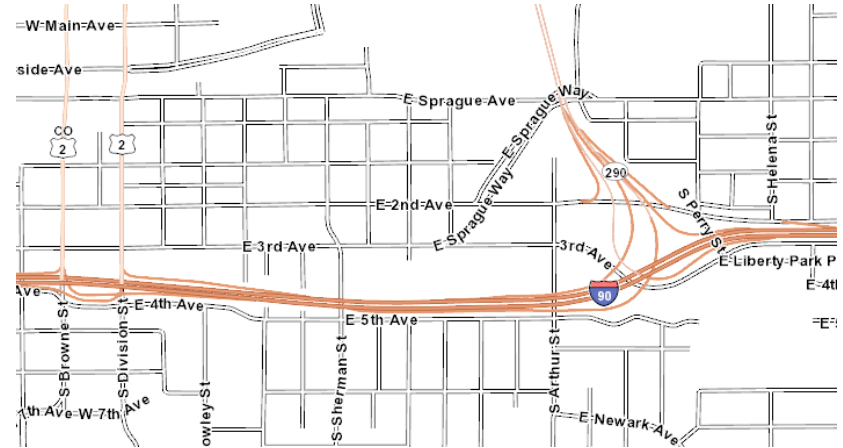
Last Modified: September 24, 2015

★★★★★ (0 ratings, 0 comments, 1,952 views)

# Layer Development

(Map Service)

- Public Roads
- Major Public Lands



# Layer Development

(Map Service)

- **Environmental Mapping Layers**  
(75 new layers in 9 subject areas)

- ▶ ☒ Stormwater Features Inventory

- ▶ ☒ Cultural Resources

- ▶ ☒ Environmental Health

- ▶ ☒ Fish and Wildlife

- ▶ ☒ Rivers and Waterbodies

- ▶ ☒ Water Quality

- ▶ ☒ Wetlands

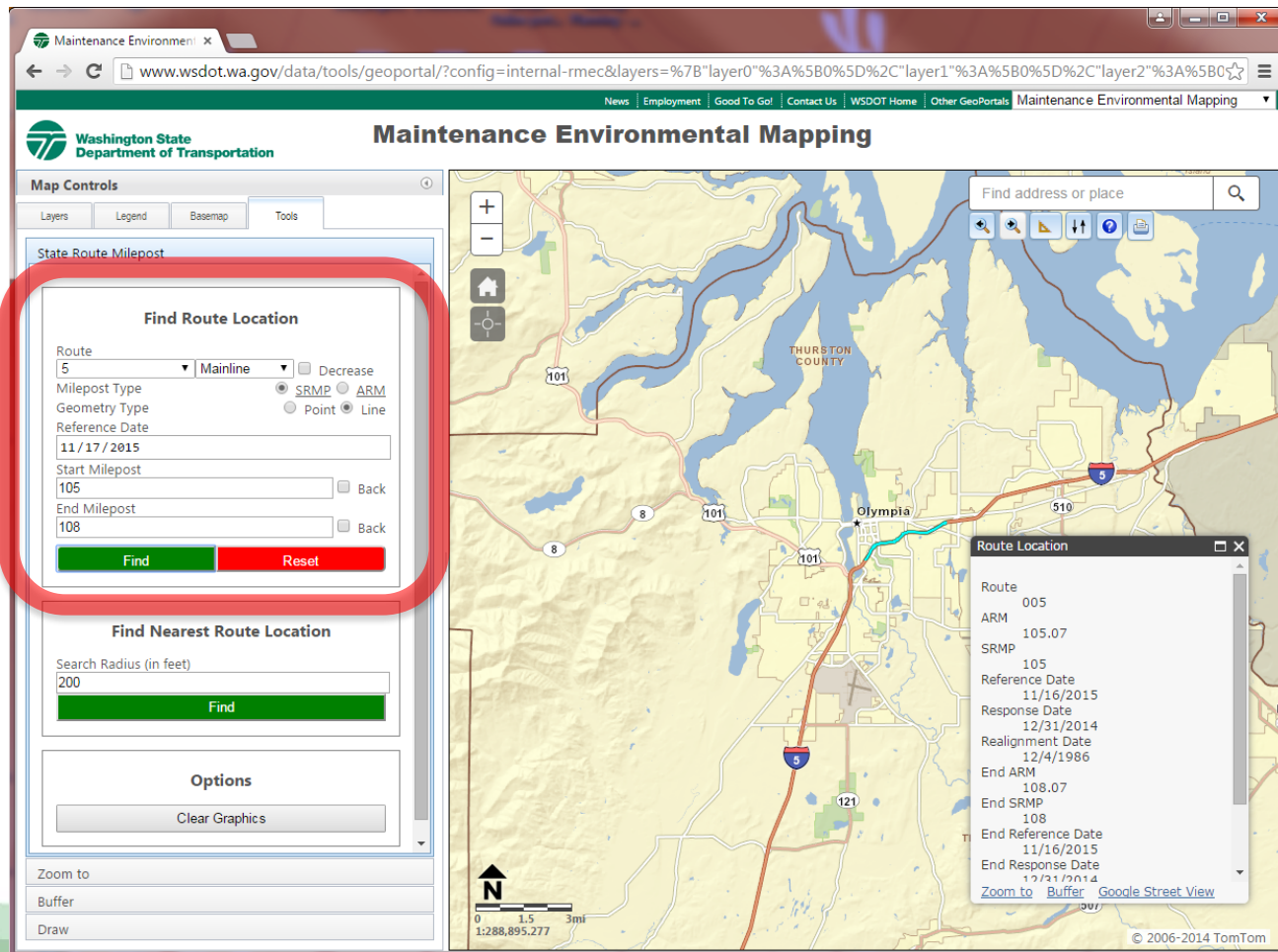
- ▶ ☒ FEMA Flood Information

- ▶ ☒ Transportation Features

(Map View Selector)



(Map a line based on Milepost range)





# New Functionality

(show offset distance to nearest route location)

WSDOT GeoPortal

Washington State Department of Transportation

Map Controls

Layers Legend Basemap Tools

State Route Milepost

**Find Route Location**

Route: 16 Mainline Decrease

Milepost Type: SRMP ARM

Geometry Type: Point Line

Reference Date: 11/17/2015

Milepost: Back

Find Reset

**Find Nearest Route Location**

Search Radius (in feet): 200

Find

**Options**

Clear Graphics

Zoom to Buffer Draw

**Route Location**

ID: 0

Route: 005Q110952

ARM: 0.2

SRMP: 0.2

Reference Date: 11/16/2015

Response Date: 12/31/2014

Realignment Date: 12/4/1986

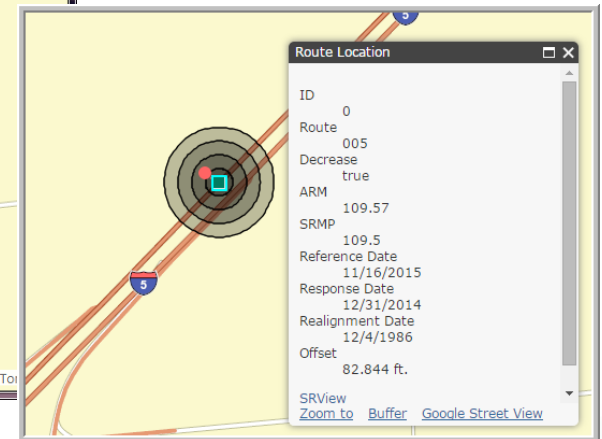
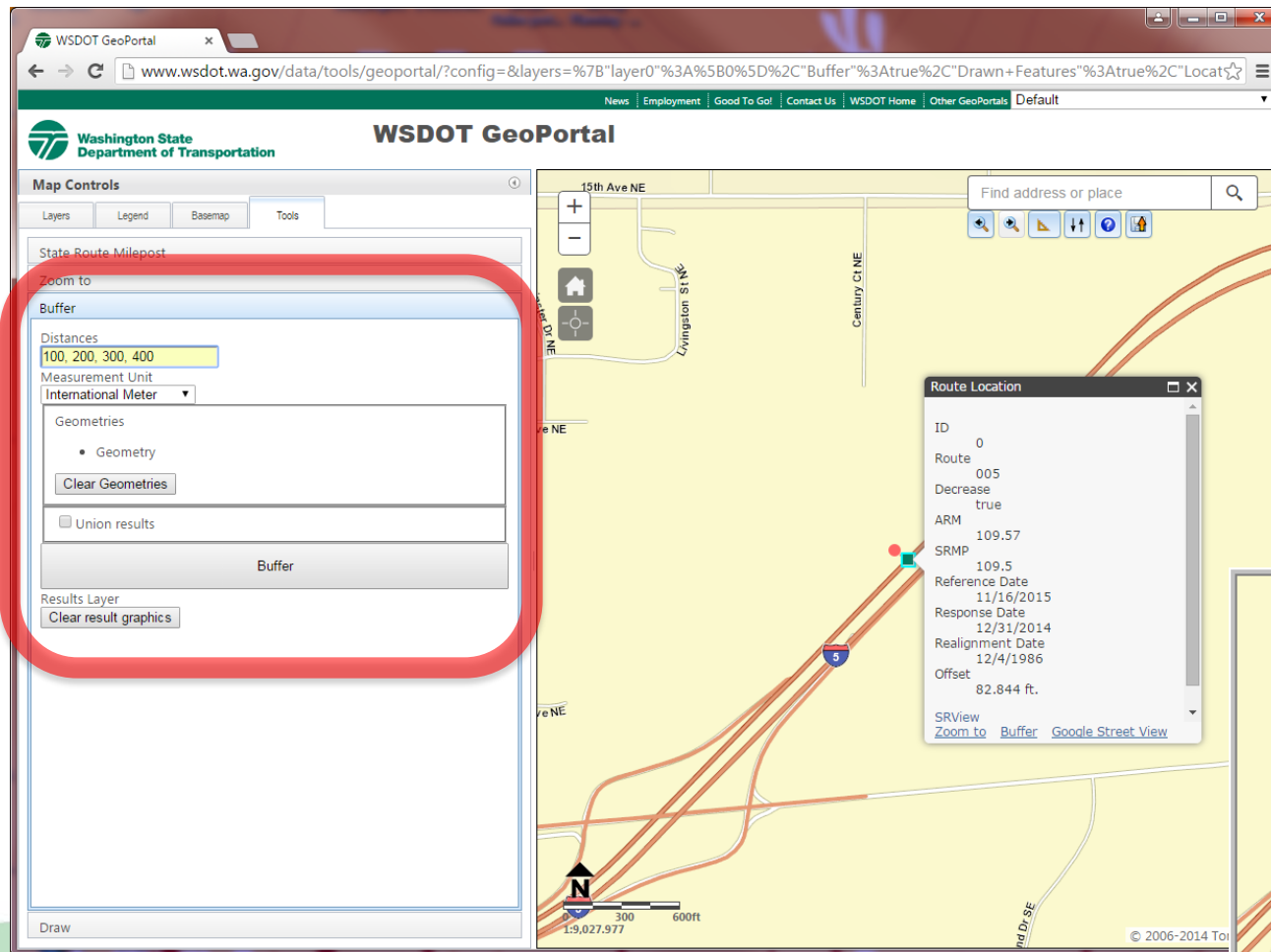
Offset: -105.981 ft.

[SRView](#)

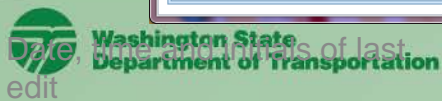
[Zoom to](#) [Buffer](#) [Google Street View](#)

# New Functionality

(Buffer selected features/graphics)

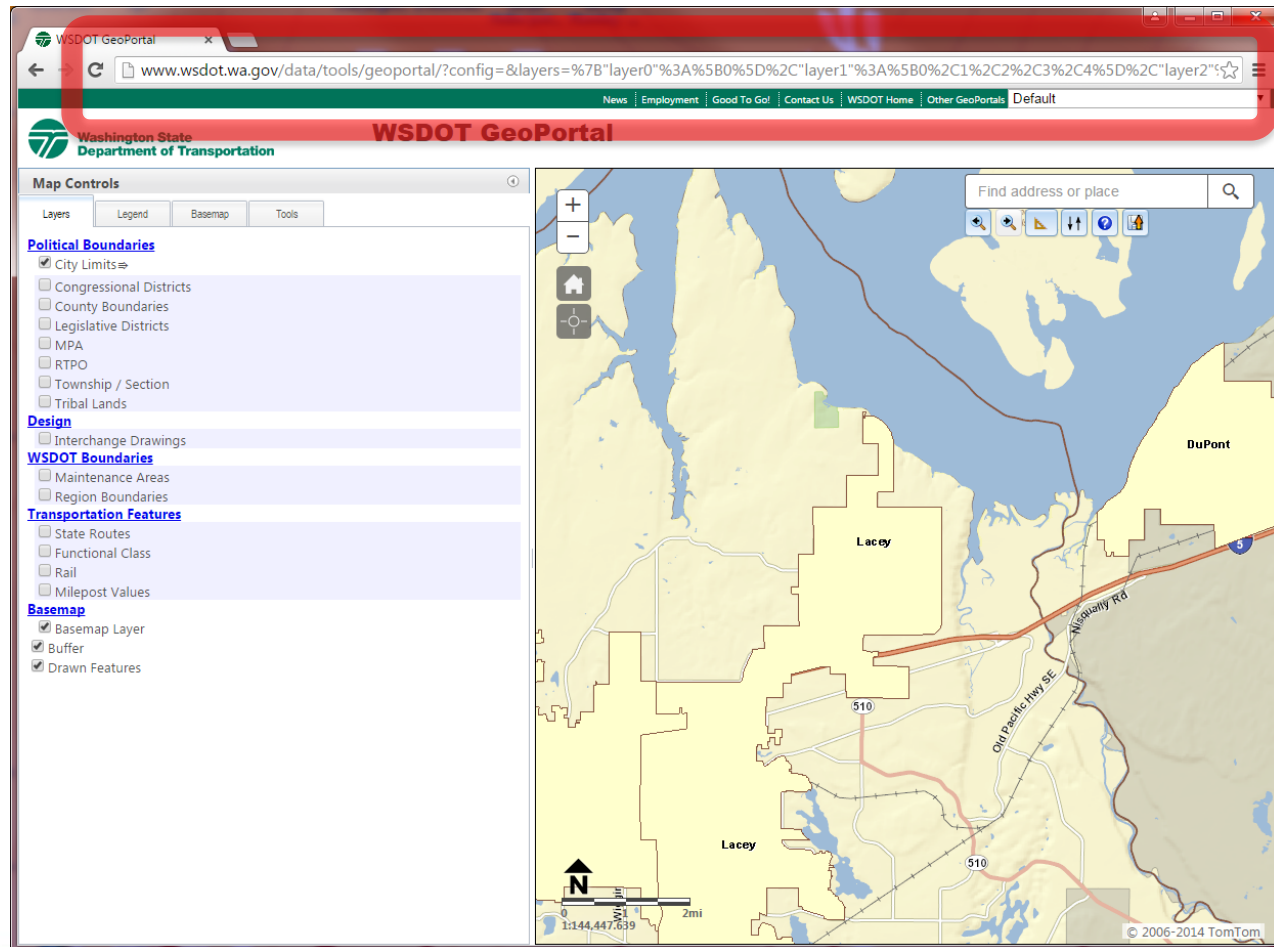


(Draw & Delete graphics and text)





(return to prior session)



# User Interface Improvements

(Legend & Map a Milepost improvements)

Map Controls

LayersLegendBasemapTools

State Route Milepost

Find Route Location

Route  
2MainlineDecrease  
Milepost TypeSRMPARM  
Geometry TypePointLine  
Reference Date  
11/17/2015  
Milepost  
Back  
FindReset

Find Nearest Route Location

Search Radius (in feet)  
200  
Find

Options

Clear Graphics

Map Controls

LayersLegendBasemapTools

Located Milepost

Event  
Route Location  
others

Located Segment

Event  
Route Location  
others

Buffer

# Lessons Learned

- Be strategic when you publish a service with 70+ layers.
- Stay informed about upcoming software enhancements/ capabilities.

# Technical Resources

- Get our code on GitHub

Search for: WSDOT-GIS/GeoPortal

- Helpful mxd tools

- Analyze map performance with [PerfQAnalyzer](#)
- [X-Ray for ArcMap](#) used to document the properties of your map documents

PerfQ Analyzer 10.2.0.168

Rendering Extents Script Log Fetch DBMS Help

Draw Events

Layer	Background	Geography	Annotation	Selection	GeoSelection	Total
Traffic Counts	-	41.34	0.18	0.11	-	41.64
ATR Counts	-	11.09	0.20	0.12	-	11.40
Traffic Sections	-	19.32	2.58	1.36	-	23.27
All Layers	0.90	-	-	-	0.10	77.31
Traffic Counts	-	53.83	0.18	0.11	-	54.13
ATR Counts	-	20.81	0.20	0.12	-	21.13
Traffic Sections	-	27.71	2.55	1.41	-	31.67
All Layers	0.92	-	-	-	0.10	107.94
Traffic Counts	-	29.61	0.19	0.11	-	29.91
ATR Counts	-	13.05	0.20	0.12	-	13.38
Traffic Sections	-	53.78	2.55	1.34	-	57.67
All Layers	0.84	-	-	-	0.10	101.91

Full ArcMap X-Ray Documentation for \\hqolymgis23d\Projects\Shared\WSDOTWebBaseMapWebMercator.mxd

Date: Tuesday, November 17, 2015  
Time: 9:59:25 AM

X-Ray for ArcMap

Layers X-Ray Documentation

X | Xs | Xa | Xx | Dx | EL | AL | Sf | ?

Document Title	WSDOT - Basemap
Comments	This statewide base map presents highway and local road level data for the state of Washington. This base map includes public road features, administrative boundaries, cities limits, and parks overlaid on shaded relief imagery for added context. The map was developed by WSDOT Transportation Data and GIS Office.
Author	Julie Jackson
Keywords	WSDOT
Category	
Subject	Base Map of Washington State, WSDOT

Data Frame Name	Layers
Description	This statewide base map presents highway and local road level data for the state of Washington. This base map includes water features, administrative boundaries, cities limits, and parks overlaid on shaded relief imagery for added context. The map was developed by WSDOT Transportation Data and GIS Office.
Spatial Reference	WGS_1984_Web_Mercator_Auxiliary_Sphere

Parent Layer	Layer Name	Description	Credits	Representation	Maximum Scale	Minimum Scale	Visible	Source Name
Layers	Mask			Polygon	0	0	true	Mask
Layers	5 - 1K				0	5000	true	
5 - 1K	Transportation				0	0	true	
Transportation	Ferry Terminal Icon #3			Point	0	0	true	FerryTermPubPriv
Transportation	4k State Routes Increase			Polyline	0	0	true	SR24kLRSIncreasingSPS
Transportation	4k State Routes Decrease			Polyline	0	0	true	SR24kLRSDecreasingSPS

# Future Enhancements

(What remains from the backlog list)

- Tool for tracking data/service/application dependencies
- Allow users to change symbology
- Allow users to add their own data
- Allow users to save and return to their map session.
- Allow users to work disconnected, and on a mobile device

# Contacts

for web app technical info

[Julie.Jackson@wsdot.wa.gov](mailto:Julie.Jackson@wsdot.wa.gov)

360.596.8919

for environmental data info

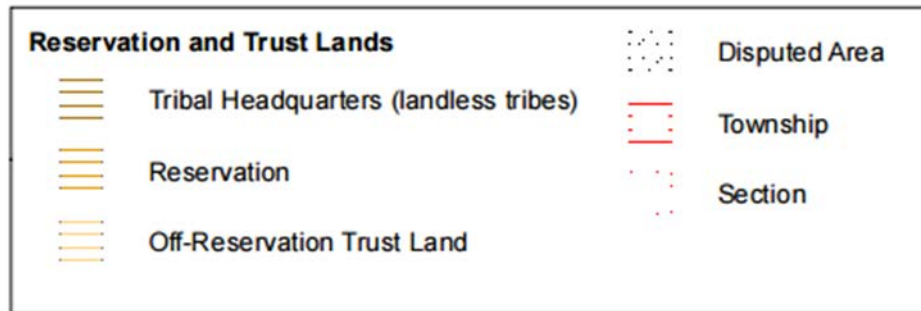
[Elizabeth.Lanzer@wsdot.wa.gov](mailto:Elizabeth.Lanzer@wsdot.wa.gov)

360.705.7476



# Some unresolved bugs

- Print services blank out when you are zoomed to the largest scale of your chosen basemap
- Banding problem with printed legend





# TFS – Backlog List

Order	Work Item Type	Title	State	Effort	Iteration Path
1	Product Backlo...	■ Tool for tracking data/map service/application connections	Committed	32	RMEC Workbench Web App
2	Product Backlo...	■ Add save graphics to localStorage feature	Approved	32	RMEC Workbench Web App
3	Product Backlo...	■ Add ability to change colors and/or symbology of features	Committed	128	RMEC Workbench Web App
4	Product Backlo...	■ Add ability to load shapefile	Committed	32	RMEC Workbench Web App
5	Product Backlo...	■ Add ability to move drawn graphic	Approved	32	RMEC Workbench Web App
6	Product Backlo...	■ Ability to access the RMEC map application from outside the firewa...	New		RMEC Workbench Web App
7	Product Backlo...	■ Add ability to change definition queries	New		RMEC Workbench Web App
8	Product Backlo...	■ Develop users guide	New		RMEC Workbench Web App
9	Product Backlo...	■ Update generic users guide	New		RMEC Workbench Web App
10	Product Backlo...	■ Add ability to add data from external sources	New	128	RMEC Workbench Web App
11	Product Backlo...	■ Update SOE metadata to work with new ESRI metadata version	New	32	RMEC Workbench Web App
12	Product Backlo...	■ Add application link to ESO and RMEC web page	New	10	RMEC Workbench Web App
13	Bug	■ Environmental Mapping layer not showing up in legend	New	10	RMEC Workbench Web App
14	Bug	■ Graphics layers not showing up in printout legend	New	10	RMEC Workbench Web App
15	Bug	■ Empty Popup for Municipal Stormwater Permit Areas feature layer	New	16	RMEC Workbench Web App

# TFS – Burndown Chart

